

SEMICONDUCTOR VAPOR GROWTH METHOD

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Abstract

PURPOSE: To execute epitaxy of an atomic layer of a compound semiconductor at a low temperature by a method wherein an alkyl compound is supplied to the crystal surface of a substrate, heated hydrogen is supplied to the surface of the substrate and a raw material gas of another element constituting the compound semiconductor is supplied to the surface of the substrate.

CONSTITUTION: In a vapor growth epitaxial growth method of a compound semiconductor, e.g., a typical; III to V compound, an alkyl metal as a raw material of a group III element is supplied to the crystal surface of a substrate 2; in a state that this alkyl metal has been adsorbed to the surface of the substrate 2, heated hydrogen is supplied and the alkyl metal in an adsorbed state is decomposed; a group III element layer is deposited; a raw material gas of a group V element is supplied. These raw material gases are introduced alternately into a reaction tube 1 by an operation of changeover valves 5, 5'. Although a temperature of heated hydrogen gas used for this treatment depends on an apparatus and a treatment condition, a substrate temperature + (300 to 800 deg.C) is suitable. By this setup, even when the substrate temperature is lowered, a self-layer limiting effect can be obtained surely, while epitaxy of an atomic layer can be executed easily.